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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/886,625	07/01/97	SHENOY	N SNSY-A1996-0

MM92/0410

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EXAMINER	
GARBOWSKI, L	
ART UNIT	**PAPER NUMBER**
2825	13

DATE MAILED: 04/10/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/886,625	SHENOY et al.
Examiner	**Group Art Unit**
Barbour	2825

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 1/23/1.

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-14, 18-21 is/are pending in the application.

Of the above claim(s)_____ is/are withdrawn from consideration.

☐ Claim(s)_____ is/are allowed.

☒ Claim(s) 1-14, 18-21 is/are rejected.

☐ Claim(s)_____ is/are objected to.

☐ Claim(s)_____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on_____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on_____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number)_____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received:_____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other_____

Office Action Summary

1. This office action is in response to the communication filed 01/23/01.

2. Claims 1 and 18 are objected to because of the following informalities: as per claim 1, --i)-- should be inserted before "performing" [line 21] to signify it's performance within the "method for placing cells" [line 2], otherwise the step appears confusing in that it is just mentioned; and as per claim 18, --h)-- should be inserted before "performing" [line 18] for the reason expressed above. Appropriate correction is required.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10-14 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: as per claim 10, the language is recited as an apparatus yet no means are claimed to perform the function recited by the "performing" step [lines 17-18]. Thus, the claim is incomplete, vague and indefinite.

5. The remaining claims, though not specifically mentioned, are rejected for incorporating the errors of their respective base claims by dependency.

6. Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 recites a "mapped netlist", which has already been limited in claim 1.

7. The following rejections are based on the examiner's best interpretation of the claims in view of the issues raised above.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-3, 5-10, 12-14 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hathaway et al. [U.S. Patent #5,757,657] in view of Shouen [U.S. Patent #6,086,625].

10. As per claim 1, Hathaway et al. teach a computer controlled method for placing cells [see the entire document, at least as cited] comprising a) generating a netlist through a synthesis process [column 2, lines 35-37; NOTE: The specification teaches that "any of the synthesis tools commercially available ... can be used to generate the mapped netlist" [page 7, lines 16-18]. Therefore, considering the high level of ordinary skill in the art, a person of ordinary skill in the art at the time of the invention would have found it obvious to modify the Hathaway et al. teaching to include a mapped netlist because the ready availability of this feature facilitates and uniforms the design placement process. Thus, Official Notice is hereby taken.]; b) executing a cell separation process according to the netlist [column 2, lines 52-53]; c) changing the netlist [column 2, lines 17-19]; d) modifying spacings of the cells responsive to changes made to the netlist [column 3, lines

17-28, 45-64]; e) partitioning the cells into a plurality of partitions [column 2, lines 39-45]; f) creating a new partition [column 2, lines 39-45]; g) changing locations of partitions [column 4, lines 13-27]; h) changing placements of the cells after a partition is created [column 4, lines 13-27]; i) determining whether the placement has converged [column 2, lines 45-49], wherein steps c-f are repeated if convergence is not yet achieved [column 1, lines 65-67]. However, Hathaway et al. do not teach wherein steps b-g are performed as part of a rough placement process or performing a detailed placement and routing process. Shouen teaches a computer controlled method for placing cells, comprising a rough placement process [column 5, lines 62-67; column 6, lines 52-67; column 8, lines 37-44], followed by performing a detailed placement and routing process [column 6, lines 1-6, 28-37; column 9, lines 32-49]. Therefore, a person of ordinary skill in the art at the time of the invention would have found it obvious to employ the computer controlled method for placing cells comprising the steps taught by Hathaway et al. as part of a rough placement process with the complete circuit design method of Shouen which includes detailed placement and routing because "according to the circuit design method and the circuit design apparatus of this invention, the packaging design image is determined from a broader view on the basis of the abstract circuit information inputted upon the logic design so that an efficiency of the packaging design process may be largely improved and a development of a high-performance product may be realized. Accordingly, it is also possible to increase a yielding rate and reduce a cost when the circuit is fabricated"

[Shouen column 7, lines 28-36]. As per claim 2, Hathaway et al. further teach changing size in response to changes made to the netlist [column 3, lines 17-28; column 5, lines 51-65; column 7, lines 27-35]. As per claim 3, Hathaway et al. further teach inputting HDL, user constraints, and technology data into the synthesis process [column 1, lines 13-17; see also applicant's specification at page 2, line 24 through page 3, line 1, page 7, lines 15-22]. As per claim 5, Hathaway et al. further teach wherein the cell separation process assigns an (x,y) location to each of the cells of the netlist [column 2, lines 52-53]. As per claim 6, Hathaway et al. further teach wherein the netlist is changed based on cell location information [column 2, lines 17-19, 50-54; column 3, lines 44-50]. As per claim 7, Hathaway et al. further teach wherein a change to the netlist includes sizing a gate up or down [column 2, lines 17-19]. As per claim 8, Hathaway et al. further teach wherein a change to the netlist includes adding or deleting one or more gates [column 2, lines 17-19]. As per claim 9, Hathaway et al. further teach wherein convergence is achieved when each partition has a number of cells less than a pre-determined value [column 7, lines 30-35].

11. As per claim 10, Hathaway et al. teach a computer system including a processor coupled to a bus and a memory coupled to the bus [see the entire document, at least as cited] comprising: means for assigning locations to each of the cells of the netlist [column 2, lines 52-53]; means for changing the netlist in response to cell location information [column 2, lines 17-19], wherein an area is allowed to be scaled in response to changes

made to the netlist [column 5, lines 51-65]; means for partitioning the cells into a plurality of separate partitions, wherein cells are placed at different locations when a new partition is created or when a partition is moved [column 2, lines 39-45; column 4, lines 13-27]; means for changing the partitions, wherein the changes to the partitions result in corresponding changes to locations of where the cells are placed [column 3, lines 17-28, 45-64]; and means for determining convergence is achieved [column 2, lines 45-49]. However, considering the confusion outlined above with respect to 35 USC 112, 2nd paragraph, and although Hathaway et al. teach logic for placing cells of an integrated circuit design represented as a netlist having cells and connections between cells, Hathaway et al. do not specifically use the term rough placement logic. Shouen teaches a computer system comprising a rough placement logic [column 5, lines 62-67; column 6, lines 52-67; column 8, lines 37-44], including means for performing a detailed placement and routing process [column 6, lines 1-6, 28-37; column 9, lines 32-49]. Therefore, a person of ordinary skill in the art at the time of the invention would have found it obvious to employ the logic of Hathaway et al. as a rough placement logic with the complete circuit design apparatus of Shouen which includes detailed placement and routing because "according to the circuit design method and the circuit design apparatus of this invention, the packaging design image is determined from a broader view on the basis of the abstract circuit information inputted upon the logic design so that an efficiency of the packaging design process may be largely improved and a development of a high-performance product

may be realized. Accordingly, it is also possible to increase a yielding rate and reduce a cost when the circuit is fabricated" [Shouen column 7, lines 28-36]. As per claim 12, Hathaway et al. further teach wherein a change to the netlist includes sizing a gate up or down [column 2, lines 17-19]. As per claim 13, Hathaway et al. further teach wherein a change to the netlist includes adding or deleting one or more gates [column 2, lines 17-19]. As per claim 14, Hathaway et al. further teach wherein convergence is achieved when each partition has a number of cells less than a pre-determined value [column 7, lines 30-35].

12. As per claims 18-20, the combination of Hathaway et al. [column 1, lines 15-16] and Shouen [figure 2] teach a computer-readable medium having stored thereon instructions for causing a computer to implement a placement process as outlined in the rejection of claims 1-3 above. The claims are considered rejected based upon the reasoning outlined above, and such is omitted here for sake of brevity.

13. Claim 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hathaway et al. in view of Shouen, and further in view of applicant's specification.

14. The above combinations teach the features from which the claims depend, but do not teach a mapped netlist. The specification teaches that "any of the synthesis tools commercially available ... can be used to generate the mapped netlist" [page 7, lines 16-18]. Therefore, considering the high level of ordinary skill in the art, a person of ordinary skill in the art at the time of the invention would have found it obvious to modify the

Hathaway et al. teaching to include a mapped netlist because the ready availability of this feature facilitates and uniforms the design placement process.

REMARKS

15. The examiner phoned applicant's representative twice to speed along prosecution on the merits, however, neither call was returned.

16. Applicant's arguments filed 01/23/01 have been fully considered but they are not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant's arguments merely recite two and one broad sentence(s) about the respective references. Considering that the test for obviousness is what the combined teachings of the references would have suggested to those of ordinary skill in the art [see *In re Keller,* 642 F.2d 413, 208 USPQ 871 (CCPA 1981)], the applicant's arguments are hardly persuasive. Furthermore, although the applicant states the significance of the invention [page 6, first sentence], the references and rejection provided by the examiner teach each of the recited limitations of the claimed language, including the reasoning and motivation to thus combine. Therefore, the examiner maintains the rejections are recited above to reflect the amendments.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

18. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh Marie Garbowski whose telephone number is (703) 305-9753.

20. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Leigh Marie Garbowski
April 6, 2001

MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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